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**Topic 52 - While Loops: Setting a Flag**

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**What**

* A **flag** is a **variable used to control the execution** of a loop. Typically, it’s set to either True or False (Boolean values) to signal when a loop should continue or stop.
* Flags can help make code **more readable** and **flexible** by clearly indicating the purpose and conditions of loop termination.

**Why**

* **Simplified Loop Control**: Using a flag variable makes the **while loop’s purpose** more clear, especially in larger, more complex code.
* **Flexible Conditions**: It allows for multiple conditions and **simplifies handling exit conditions** within the loop, making it easier to manage and read.

**How**

1. **Setting a Flag for Loop Control**  
   In this example, keep\_looping is the flag variable. As long as keep\_looping is True, the loop runs:

python

Copy code

cleanest\_cities = ["Cheyenne", "Santa Fe", "Tucson", "Great Falls", "Honolulu"]

keep\_looping = True

while keep\_looping:

user\_input = input("Enter a city, or 'q' to quit: ")

if user\_input != "q":

for city in cleanest\_cities:

if user\_input == city:

print("It's one of the cleanest cities")

break # Exit for loop if a match is found

else:

keep\_looping = False # Exit the loop by setting the flag to False

1. **Explanation of the Code**
   * **Flag Initialization**: On Line 1, keep\_looping is set to True. This Boolean variable will control when the loop stops.
   * **While Condition**: Line 2 states that the loop should continue as long as keep\_looping is True.
   * **Loop Execution**: Inside the loop, if the user’s input is **not “q”**, it checks if the entered city is one of the cleanest cities.
   * **Exit Condition**: If the user inputs “q,” Line 10 sets keep\_looping to False, which **ends the loop**.

**Things to Remember**

* **Booleans Are Not Strings**: Write True and False without quotation marks and **capitalize** them.
* **Use Flags to Control Loops**: This method is especially useful when multiple conditions can end the loop.